

	Type	L #	Hits	Search Text	DBs
1	BRS	L1	2129	429/209,224,231.8,231.95.ccls.	USPA T; US-P GPUB
2	BRS	L2	1120	li?sub.x	USPA T; US-P GPUB
3	BRS	L3	6539	mno?sub.2	USPA T; US-P GPUB
4	BRS	L4	120	2 adj 3	USPA T; US-P GPUB
5	BRS	L5	113	4 and @ad<20000317	USPA T; US-P GPUB
6	BRS	L6	106	5 and lithium and battery	USPA T; US-P GPUB
7	BRS	L7	92	6 and (propylene adj carbonate)	USPA T; US-P GPUB
8	BRS	L8	0	x=0.05 adj to adj 1.2	USPA T; US-P GPUB
9	BRS	L9	18	x adj3 0.05 adj3 1.2	USPA T; US-P GPUB
10	BRS	L10	12	7 and 9	USPA T; US-P GPUB
11	BRS	L11	47	7 and 1.2	USPA T; US-P GPUB
12	BRS	L12	45	7 not 11	USPA T; US-P GPUB
13	BRS	L13	1	6168887.pn.	USPA T; US-P GPUB

=> s (0.94-0.96)/li and 1/mn and 2/o

1624 (0.94-0.96)/LI

382438 1/MN

3987190 2/O

L1 221 (0.94-0.96)/LI AND 1/MN AND 2/O

=> s (0.94-0.96)/li and (0.75-0.94)/mn and (0.06-0.25)/al and 2/o

1624 (0.94-0.96)/LI

3933 (0.75-0.94)/MN

7630 (0.06-0.25)/AL

3987190 2/O

L2 12 (0.94-0.96)/LI AND (0.75-0.94)/MN AND (0.06-0.25)/AL AND 2/O

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

30.66

30.87

FILE 'CAPLUS' ENTERED AT 13:07:38 ON 24 DEC 2002

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FILE COVERS 1907 - 24 Dec 2002 VOL 137 ISS 26

FILE LAST UPDATED: 23 Dec 2002 (20021223/ED)

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=> s l1

L3 93 L1

=> s l3 and battery

95777 BATTERY

76301 BATTERIES

104336 BATTERY

(BATTERY OR BATTERIES)

L4 86 L3 AND BATTERY

=> s l4 and lithium

247494 LITHIUM

331 LITHIUMS

247613 LITHIUM

(LITHIUM OR LITHIUMS)

L5 86 L4 AND LITHIUM

=> s 12

L6 4 L2

=> s 16 and lithium and battery

247494 LITHIUM

331 LITHIUMS

247613 LITHIUM

(LITHIUM OR LITHIUMS)

95777 BATTERY

76301 BATTERIES

104336 BATTERY

(BATTERY OR BATTERIES)

L7 4 L6 AND LITHIUM AND BATTERY

=> d ibib abs 14 1-86

L4 ANSWER 1 OF 86 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:928103 CAPLUS

DOCUMENT NUMBER: 137:387175

TITLE: Nonaqueous electrolyte lithium secondary  
**battery**

INVENTOR(S): Imachi, Naoki; Nakane, Ikuro; Narukawa, Satoshi

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 17 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002182504	A1	20021205	US 2002-158019	20020531
JP 2002358961	A2	20021213	JP 2001-164728	20010531
PRIORITY/APPLN. INFO.:			JP 2001-164728	A 20010531

AB A nonaq. electrolyte secondary **battery** according to the invention comprises a pos. electrode contg. a pos. electrode active material including lithium contg. composite oxide having a layer crystal structure represented by a general formula of  $\text{Li}_x\text{Mn}_a\text{Co}_b\text{Mg}_c\text{O}_2$  ( $0.9 \leq x \leq 1.1$ ,  $0.45 \leq a \leq 0.55$ ,  $0.45 \leq b \leq 0.55$ ,  $0 \leq c \leq 0.05$  and  $0.9 < a+b+c \leq 1.1$  are set and M is at least one kind selected from Al, Mg, Sn, Ti and Zr), a neg. electrode contg. a neg. electrode active material capable of intercalating and deintercalating lithium ion, a separator for sepg. the pos. electrode from the neg. electrode, and a nonaq. electrolyte.

L4 ANSWER 2 OF 86 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2002:906792 CAPLUS

DOCUMENT NUMBER: 137:387140

TITLE: Nonaqueous electrolyte additive for improving safety of lithium ion secondary **battery**

INVENTOR(S): Park, Hong-Kyu; Choi, Jeh-Won; Lee, Yeon-Hee; An, Young-Tack; Kim, Hyeong-Jin

PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea

SOURCE: PCT Int. Appl., 21 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

DOCUMENT NUMBER: 111:198479  
TITLE: Electrochemical reduction of manganese dioxide in lithium cells with aprotic electrolyte solutions. I. Electrochemical charge relations and x-ray

diffraction

measurements  
AUTHOR(S): Richter, Hans Juergen; Hanisch, Uwe; Schneider, Wolfgang; Wiesener, Klaus; Kleinstueck, Karlheinz; Tobisch, Josef

CORPORATE SOURCE: Sekt. Chem., Tech. Univ. Dresden, Dresden, DDR-8027, Ger. Dem. Rep.

SOURCE: Zeitschrift fuer Physikalische Chemie (Leipzig) (1989), 270(4), 793-800

CODEN: ZPCLAH; ISSN: 0323-4479

DOCUMENT TYPE: Journal

LANGUAGE: German

AB On the basis of the discharge behavior of electrolytic MnO<sub>2</sub> tempered at different temps., 3 discharge stages can be formulated according to the following equations: MnO<sub>2</sub> + aLi<sup>+</sup> + ae<sup>-</sup> .fwdarw. Li<sub>a</sub>MnO<sub>2</sub> (0 < a .ltoreq. 0.5), Li<sub>a</sub>MnO<sub>2</sub> + bLi<sup>+</sup> + be<sup>-</sup> .fwdarw. b/0.5 - a Li<sub>a</sub>MnO<sub>2</sub> + b/0.5 - a Li<sub>0.5</sub>MnO<sub>2</sub> (b .ltoreq. 0.5 - a), and Li<sub>0.5</sub>MnO<sub>2</sub> + cLi<sup>+</sup> + ce<sup>-</sup> .fwdarw. Li<sub>0.5+c</sub>MnO<sub>2</sub> (0 < c .ltoreq. 0.5). The 1st discharge stage represents a redn. in a homogeneous phase where it is supposed that Li insertion takes place in the MnO<sub>2</sub> lattice at the tetrahedral positions which have no

joint

faces together with MnO<sub>6</sub> octahedrons. The 2nd discharge stage represents a 2 phase region where the MnO<sub>2</sub> initial structure is transformed into the phase Li<sub>0.5</sub>MnO<sub>2</sub>. The 3rd discharge stage again represents a redn.

without

a change in the structure (Li<sup>+</sup> is inserted into the newly formed phase). For .gamma.-MnO<sub>2</sub> tempered between 350 and 400.degree., the 1st stage extends to a discharge degree of .apprxeq.10% (a = 0.1). By the means of x-ray diffraction measurements of this MnO<sub>2</sub> depends on the degree of discharge, the 2 phase area was clearly detected at discharge degrees between .apprxeq.10% and .apprxeq.50%.

=> d ibib abs 17 1-86

L7 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:691890 CAPLUS

DOCUMENT NUMBER: 135:229388

TITLE: Nonaqueous electrolyte **battery** with lithium transition metal oxide cathode

INVENTOR(S): Yamaura, Kiyoshi

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 11 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1134825	A2	20010919	EP 2001-105813	20010308
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001266881	A2	20010928	JP 2000-81858	20000317
CA 2340483	AA	20010917	CA 2001-2340483	20010313

CN 1314718 A 20010926 CN 2001-111610 20010316  
US 2001053483 A1 20011220 US 2001-811897 20010319  
PRIORITY APPLN. INFO.: JP 2000-81858 A 20000317

AB A nonaq. electrolyte **battery** comprises a cathode contg. a Li-transition metal oxide cathode active material, an anode contg. C compd. or Li, and a nonaq. electrolyte interposed between the anode and the cathode; wherein the Li-transition metal oxide is  $\text{Li}_x\text{MnO}_2$  or  $\text{Li}_x\text{Mn}_{1-y}\text{Al}_y\text{O}_2$  where  $x = 0.94-0.96$  and  $y = 0.06-0.25$ .

L7 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2001:7553 CAPLUS  
DOCUMENT NUMBER: 134:74026  
TITLE: Layered **lithium** manganese oxide bronze and electrodes thereof  
INVENTOR(S): Dahn, Jeffrey R.; Paulsen, Jens M.  
PATENT ASSIGNEE(S): Chemetals Technology Corporation, USA  
SOURCE: U.S., 16 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US <u>6168887</u>	B1	20010102	US 1999-231636	19990115

AB In a rechargeable **battery** including a cathode, an anode, and an electrolyte one of the electrodes comprises a layered bronze with a structure comprising a stack of 2 alternative layers (I and II). Layer I has a compn. of  $\text{X}(\text{MyMn}_{1-y})\text{X}$  where M is a 3d transition metal or Al and/or Li.  $y = 0-0.4$ , and X is any atom, anion and/or a mixt. wherein Mn or M is surrounded by 6 anions forming the corners of an octahedron. Layer II contains Li atoms on L-sites that form a perfect or distorted hexagonal lattice. The stack is subjected to the L sites of layer II being surrounded by 6 atoms or anions that form the corners of an octahedron, a type-II layer forming the corners of an octahedron, the bronze comprising Mn in an oxidn. state of less than IV.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE  
FORMAT

L7 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:313649 CAPLUS  
DOCUMENT NUMBER: 132:310837  
TITLE: Cathode active mass for secondary **lithium batteries** and their manufacture  
INVENTOR(S): Sakurai, Takeshi; Sugihara, Tadaashi  
PATENT ASSIGNEE(S): Mitsubishi Materials Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000133266	A2	20000512	JP 1998-306463	19981028

AB The cathode active mass is substituted rhombic Li manganate  $\text{Li}_{1-z}\text{Na}_z\text{M}_x\text{M}'_y\text{Mn}_{1-x-y}\text{O}_2$ , where M is selected from Ge, Ga, In, Sn, Sc, Nd, Sm, Eu, Gd, Dy, Ho, Y, Er, Yb, and Lu; M' is selected from Ti, Zr, V, Nb, Fe, and Al;  $0 < x < 0.3$ ,  $0 < y < 0.3$ , and  $0 < (x+y) < 0.3$ ; and  $0 < z < 1$ . The active mass is prep'd. by mixing  $\text{Na}_2\text{CO}_3$  and Mn oxide or Mn acetate with oxides, hydroxides, and/or chlorides of M and M'; firing the mixt. at 650-750.degree. in N for .gtoreq.5 h; adding LiBr to the fired mixt. at a Li/Na mol ratio 6-25; reacting the mixt. in a n-hexanol soln. in a glass reaction tank (or firing some selected components and adding the fired material and other components with the  $\text{LiOH}\cdot\text{H}_2\text{O}$  to the reaction tank) at 130-160.degree. for 2-30 h for ion exchange of Na by Li; repeating the ion exchange by using new batches of LiBr; washing the reaction product with EtOH; and vacuum drying.

L7 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 1998:596036 CAPLUS

DOCUMENT NUMBER: 129:205207

TITLE: Secondary lithium batteries with lithium and magnesium containing oxide cathodes

INVENTOR(S): Igawa, Akiko; Tsuruoka, Shigeo; Yoshikawa, Masanori; Muranaka, Kiyoshi; Komatsu, Yoshimi; Yamauchi, Shuko

PATENT ASSIGNEE(S): Hitachi, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 25 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10241691	A2	19980911	JP 1997-354358	19971224
PRIORITY APPLN. INFO.:			JP 1996-343041	19961224

AB The **batteries** use cathodes composed layer structured  $\text{LiMO}_2$ , where M = Mn, Co, Ni, and/or Fe, and part of Li is replaced by Mg. The cathode active mass is preferably  $\text{Li}_w\text{Mg}_v\text{Ni}_x\text{M}_1\text{yN}_z\text{O}_2$ , where  $\text{M}_1$  = Mn, Co, and/or Fe, N = Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B,  $0 \leq w \leq 1.2$ ,  $0.001 \leq v \leq 0.02$ ,  $0.5 \leq x \leq 0.85$ ,  $0.05 \leq y \leq 0.5$ , and  $0 \leq z \leq 0.2$ ;  $\text{Li}_w\text{Mg}_v\text{Co}_x\text{M}_2\text{z}'\text{O}_2$ , where  $\text{M}_2$  = Ni, Mn, Fe, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or

B, and  $0 \leq z \leq 0.5$ ;  $\text{Li}_w\text{Mg}_v\text{Mn}_x\text{M}_3\text{z}'\text{O}_2$ , where  $\text{M}_3$  = Ni, Co, Fe, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B; or  $\text{Li}_w\text{Mg}_v\text{Fe}_x\text{M}_4\text{z}'\text{O}_2$ ,

where

$\text{M}_4$  = Ni, Co, Mn, Si, Al, Ca, Cu, P, In, Sn, Mo, Nb, Y, Bi and/or B.